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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/940,053	08/27/2001	Vasilis Papanikolaou	764164605017	4427
24325	7590	12/02/2004	EXAMINER	
STEPHEN D. SCANLON JONES DAY 901 LAKESIDE AVENUE CLEVELAND, OH 44114			CHANG, EDITH M	
			ART UNIT	PAPER NUMBER
			2637	

DATE MAILED: 12/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/940,053	Applicant(s) PAPANIKOLAOU ET AL.	
	Examiner Edith M Chang	Art Unit 2637	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 August 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-41 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-41 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 August 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>51203</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. The drawings are objected to because in Fig. 13, the elements 314 shown as multipliers should be adders.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

2. Claims 23-24 and 41 are objected to because of the following informalities:

Claim 23, line 3: "a transmission" is suggested changing to "the transmission".

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Claim 24, line 1: "each supply" is suggested changing to "each supplies".

Claim 41, it is suggested to delete lines 18-19 which are duplicated of lines 20-21.

Appropriate corrections are required.

Claim Rejections - 35 USC § 112

3. Claims 1-34, 36 and 38-41 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

In claims 1, 36, 38, 40 and 41, the limitation "transmission swing" in the term "a transmission swing of the input signal" does not taught or described in the specification.

Claims 2-34 and 39 are directly or indirectly dependent on the rejected claims 1 and 38.

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 22, 35-40 and 41 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 22, line 2: "each multi-stage equalizer core" lacks antecedent basis.

Claim 35 & Claim 41, line 5: "the equalizer input signal" lacks antecedent basis.

Claims 36-40 are directly or indirectly dependent on the rejected claim 35.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-5, 7, 10-11, 15-21, 23-24, 29, 31 and 35-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hussein et al. (US 6,148,046) in view of Cranford, Jr, et al. (US 5,940,441).

To claims 1 & 35-36, in FIG. 28, Hussein teaches an equalizer core and its method, the equalizer 242 FIG. 28, receiving the transmitted signal, generating the equalized signal out of the equalizer 242; a slicer 252 converting the output of the equalizer to a digital output signal having a fixed output swing approximating the swing of the received signal to the AGC in FIG.8, where the x unsliced signal and x' the sliced signal input to the gain error evaluator (GEE of FIG.8); and an automatic gain control (AGC) loop, the element 256 is the AGC generating the control signal. However, Hussein does not specify the frequency control in the control signal to equalize the received signal.

Cranford teaches an equalizer using a continuous-time filter to generate the gain and the bandwidth controls to compensate the losses incurred in the transmission medium in FIGURE 2, FIGURE 4 and Abstract lines 5-10. In FIGURES 2 and 3, the control signal 116 comprises the gain control V_G to control the frequency dependent gain (FIGURE 4 & column 7 lines 1-5) and the bandwidth control V_C (310 and 312 FIGURE 3);

As Hussein using the blind automatic feedback gain control system with the equalizer in a digital communication device to improve the BER (column 2 lines 12-20, column 10 lines 45-55), it would have been obvious to a one of ordinary skill in the art at the time the invention was made to have the equalizer using a continuous-time filter to generate the bandwidth control taught by Cranford in Hussein's equalizer and AGC system to generate both the gain and the bandwidth controls for the purpose of compensating for loss and distortion of the input signal caused by the cable and tuning the integrated continuous-time filter (the equalizer) to compensate for semiconductor process variations (column 2 lines 40-45).

To claim 2, the Hussein's system modified with Cranford's teaching teaches the bandwidth control signal controlling/varying the bandwidth of the transfer function $H(s)$ wherein the s is the data rate of the input signal in column 7 line 55 and column 8 line 5, the equations (6) and (7) of '441.

To claims 3 & 37, the Hussein's system modified with Cranford's teaching teaches the equalizer with its transfer function to compensate the distortion occurred in the transmission, hence the compensation is the inverse of the distortion in Abstract lines 5-9 and column 3 lines 55-60 of '441.

To claim 4, the Hussein's system modified with Cranford's teaching teaches the control signal 116 comprises the gain control V_G to control the frequency dependent gain (FIGURE 4 & column 7 lines 1-5 '441).

To claims 5 & 7, the modified Hussein's system with Cranford's teaching teaches the AGC loop limits a bandwidth of the V_{out}/x and x' the output from the slicer and compares the

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bandwidth limited outputs in GEE of FIG.8 '046 to evaluate the energy difference (Δx) to generate the gain control V_G .

To claims 10 & 11, the Hussein's system modified with Cranford's teaching teaches the transmission medium is a coaxial cable and a printed circuit board trace as stated in column 1 line 15 and column 2 lines 25-30 '441.

To claims 15-17, the Hussein's system modified with Cranford's teaching teaches in FIGURE 4 of '441, the equalizer core, the element 102 FIGURE 1, which is a variable filter shown in FIGURE 4, further Cranford teaches the variable filter is a variable low-pass filter stated in column 3 lines 17-20 with two poles and one-zero that the transfer function having a pole frequency controlled by the bandwidth control signal.

To claims 18-20, the Hussein's system modified with Cranford's teaching teaches in FIGURE 1 element 102 (the equalizer filter) and FIGURE 4 of '441 the filter implementing the equalizer; in the FIGURE 4, element 400 is the transfer function block of the transfer function G_{m1} which multiplies the gain control V_G to its transfer function, filter 102 is the low pass filter (column 6 lines 47-55, the equation (1) is the transfer function of the equalizer) receiving the output from the G_{m1} and the bandwidth control V_C , and the V_{IN} is added to V_{OUT} the output of the filter, and it is well known that the gain control is normalized to 1 (as taught by the related art).

To claims 21 & 23-24, the Hussein's system modified with Cranford's teaching teaches in FIGURE 4 of '441, the equalizer core being a multi-stage core having a plurality of individual equalizer core stages (column 6 lines 11-20) wherein each stage supply a transfer function G_m (as shown in FIGURE 5) substantially equaling portion of the gain of the transfer function.

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To claims 29 & 31, the modified Hussein's system with Cranford's teaching in FIG.8 '046 the element 144 is the adder comparing the V_{out}/x and the x' output of the slicer generating the Δx (the single-stage gain control) as the output of the peak detector of FIGURE 3 '441 to generate the gain control V_G and the bandwidth control V_c . In FIGURE 3 '441 where the V_c is based on the V_G the energy difference from the processing circuitry.

8. Claims 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hussein et al. (US 6,148,046) in view of Schneider (US 5,184,292).

To claims 12-14, Hussein does not specify the closed loop controller type, however Schneider teaches the well-known techniques of closes loop controller type in FIG.2. and column 1 lines 35-45. It would have been obvious to a one of ordinary skill in the art at the time the invention was make to use the techniques taught by Schneider in Hussein's AGC loop for the purpose of having a closed-loop control with high speed and accuracy (column 2 lines 20-25).

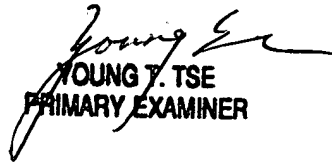
9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edith M Chang whose telephone number is 571-272-3041. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jayanti Patel can be reached on 571-272-2988. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Edith Chang
November 24, 2004


YOUNG T. TSE
PRIMARY EXAMINER